



REPORT

ON THE

MAURITIUS SUGAR INDUSTRY

BY

SIR FRANCIS WATTS, K.C.M.G.

1929.

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to Parliament by Command of His Majesty
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1929.

I have made careful and detailed inquiry concerning the condition of the sugar industry of Mauritius: for this purpose I have visited a large number of plantations and factories and have had access to the books of the majority of the firms and companies engaged in the cultivation and manufacture of sugar: in this connection the fullest facilities have been afforded me so as to enable me to form correct opinions concerning the position of affairs and the circumstances fundamental thereto.

For the sake of clarity I propose to state the principal conclusions at which I have arrived in a few brief definite statements unburdened by lengthy arguments or statistics, reserving for appropriate annexures such arguments, statistics, or proofs as I think it may be desirable to put forward to sustain these conclusions.

Estimated Monetary Loss.

1. As the result of my enquiries I am satisfied that the sugar industry of the Colony, generally speaking, is carried on at a loss in existing circumstances, that is to say, when the price of sugar, not exceeding 99° polariscopic test, is around, or below, £13 per ton f.o.b. Mauritius and the preference at present (December, 1929) granted to Empire sugar is maintained. Any diminution of the existing preference would increase the loss *pro tanto* and would be disastrous.

Cost of Production.

2. Careful enquiry has been made as to the cost of production. It is generally recognized that the cost of production in every country is a variable quantity, influenced by a number of factors, and that it differs from place to place and from time to time. As the outcome of the examination of the records of some 21 estates, out of a total of 43, which records deal with over 57 per cent. of the crop of 1928-29, or about 144,000 tons of sugar, the conclusion is arrived at that the cost of growing, manufacturing, and putting on board ship of a ton of Mauritius sugar is, as near as can be calculated, £13 1s. 2d., or Rs.8.98 per cwt. (Rs.13.75 to £1). (Mauritius sugar is usually of a quality polarizing in the neighbourhood of 99° for raws or 99½° for whites.) (See *Annexure I**)

Selling Price.

3. The average selling price during the current year has been, as near as can be ascertained, £12 2s. 10d. per ton f.o.b., or Rs.8.35 per cwt. approximately. The difference between the selling price, ascertained as near as possible, and the cost of production, also

ascertained as near as possible, both figures admittedly being difficult of exact estimation, is 18s. 4d., so that, broadly speaking, the general loss to the industry may be put at 20s. per ton, or Rs.0.70 per cwt., for the crop of 235,000 tons produced. (*See Annexure II**.)

Estates' Cultivation Carried on Efficiently.

4. After detailed enquiry and visiting many estates I am satisfied that the cultivation of the canes is carried on with a high degree of skill and efficiency, that much care is devoted to the cultivation of the soil and to the manuring of the crop, including the use of natural manures and chemical fertilizers. The effect of this is seen in the fact that on good estates it is the carefully-planned custom to grow a long succession of ratoon canes, even up to sixth or seventh, and occasionally more, and that 18 to 20, or more, tons of canes are there commonly, one might almost say usually, obtained from fourth and fifth ratoons. These facts are ample testimony to the good character of the estates' field-work. The work of the small cultivators is a matter for separate consideration. At the same time, considerable care and attention are being devoted to the introduction of such improvements as appear possible, and minor improvements are being steadily made. In the circumstances I do not feel that it can be urged that there is any marked lack of care and efficiency on the part of the estates, or that it is likely that such changes and improvements in field methods can be suggested or introduced as will substantially remedy the financial difficulties now experienced by the industry. (*See Annexure III†*.)

Factories and Their Work.

5. The manufacture of sugar is carried on in 43 factories, the total output of which varies with the season; it has averaged about 230,000 tons a year during the last five years. The largest of these factories has an output of 15,000 tons per annum, 9 an output of between 7,500 to 10,000 tons, 16 between 5,000 to 7,500 tons, and 17 under 5,000 tons.

The smallest factory is a privately-owned one, efficiently turning out under 2,500 tons per annum.

These factories are, for the most part, equipped with machinery of a fairly efficient character, maintained in good order by very capable local engineers and mechanics; a certain amount of the machinery is new, but in some instances it is old: in a few cases it calls for renewal, and this would be effected if the industry were working at a profit.

Indeed, much has been done in this direction: it is authoritatively stated that from 1921 to 1928 some £1,613,468 was spent on imported machinery for agricultural purposes and the manufacture of sugar, irrespective of the work done by local engineering firms.

I have enquired extensively and in detail concerning the work done by these factories and, in view of what had frequently been stated, I am surprised at its general excellence. The mill efficiency, generally speaking, is good; in the best factory it is 95.3 per cent., and I should place the average at about 94 per cent. of the sugar in the cane extracted into the juice. The recovery of sugar from the juice expressed is fairly good on the whole; in the best factories it averaged about $89\frac{1}{2}^{\circ}$ per cent. of $98\frac{1}{2}^{\circ}$ sugar during the reaping season 1929 just closed.

Full details on these points are given in Annexure IV*.

It is a noteworthy fact that the factories contain quite a large quantity of important machinery that has been made in the Colony by local engineering firms. This includes such major machinery as heavy mills and the engines for driving them, triple and quadruple effect evaporators, vacuum pans, and juice heaters, together with many appliances of simpler character. The fact that there is the ability to make these appliances locally renders it evident that it is possible to maintain the sugar machinery of the Colony in good running order.

While some increase of output would follow from the wide adoption of new up-to-date machinery on an extensive scale, it is fairly clear that the cost of this machinery and the attendant alterations in the methods of transport might out-weigh the advantages, and that, while there are, doubtless, several instances where amalgamation of factories, coupled with improvements of machinery, might be economically advantageous, I can see no reason for advocating the erection of a few large central factories and I do not feel that the extensive adoption of a central factory system would afford great relief to the industry. (*See Annexure V†.*)

Manufacture of High-Grade Sugar.

6. It must be conceded that the cultivation and the manufacture of sugar have received careful attention for many years past and that a relatively high degree of skill and efficiency have been attained. It is not possible to point to grave and obvious defects which may be regarded as seriously contributing to the financial difficulties now experienced, the removal of which might be expected to rehabilitate the industry.

The manufacture of sugar has been developed in a skilful manner, the production of relatively high-grade white sugar being aimed at; this has entailed considerable skill and care, so that the industry has been carried on for years at a relatively high level. Until the recent changes in the Customs tariff of the United Kingdom prejudicially affected the importation of refined and high-grade sugars it was the custom of Mauritius to manufacture various grades of white and "near" white sugars having a polariscopic

* Page 36.

† Page 46.

test of about $99\frac{1}{2}^{\circ}$. This implied care and skill in manufacture. Up to the year 1927 this class of sugar constituted over 98 per cent. of the output, in 1928 it fell to about 77 per cent. : at the present time, 1929, it is only about 20 per cent. and has been maintained at that figure to supply certain obligations and contracts.

The tendency now is to make so-called raw sugar having a polariscopic test of $98\frac{1}{2}^{\circ}$, the object being to avoid exceeding 99° at which point higher Customs tariffs are encountered in the United Kingdom.

These facts are referred to as an indication of the care and skill bestowed on manufacture.

Assistance Necessary.

7. In these circumstances, I am unable to make any suggestions in the direction of radical changes that may be made in field or factory, such as may be expected to restore the industry to a condition of financial prosperity in face of the abnormal depression of sugar prices due to over-production encouraged by the assistance given to competing producers in foreign countries. The cost of production of sugar in Mauritius is below that of all foreign countries except Java, and possibly Cuba.

Without the measure of protection afforded by the present (1929) Customs tariffs in the United Kingdom and Canada, the sugar industry of Mauritius and other British Colonies would immediately collapse, with the consequent loss of the large amount of capital employed in the growing and making of sugar, the complete loss of employment of all concerned, and the utter ruin which must infallibly ensue—consequences too appalling to contemplate.

If the protection at present afforded is withdrawn, it appears imperative that a monetary equivalent should be forthcoming to enable the industry to hold out until the intense struggle for existence in the sugar world is ameliorated.

I can see no other industry that can take the place of sugar in Mauritius, though the ancillary prosecution of some subsidiary industries may be suggested and encouraged. The maintenance of the sugar industry appears to be essential to the continuance of the economic and social life of the Colony.

8. Even with the continuation of the present tariff preferences granted by the United Kingdom and Canada the industry cannot meet the present low prices, and some further means of assistance are urgently called for. I have given the matter the most earnest consideration and the only effective remedy that I can suggest is a grant-in-aid to make good the losses that are entailed even when strenuous efforts are made to conduct the industry in the best and most economical manner possible.

Grant-in-aid recommended.

9. I strongly urge that the Imperial Government should be invited to make grants-in-aid to the Colony, calculated to make good the losses which have been incurred after all reasonable efforts have been made by those engaged in the industry. I suggest that a grant should be made in any one year equal to the loss that may reasonably be concluded to have been sustained in the previous year. Thus the grant for 1930 would be calculated on the losses incurred in 1929; the loss to be regarded as the difference between the general cost of production and the general or average selling price.

As stated above, it has been found by careful investigation that the cost of production is in the neighbourhood of £13 per ton f.o.b. If, then, the average selling price for Mauritius raw not exceeding 99° polarization is £13, or over, no grant-in-aid would be called for; but if it falls below that amount the grant-in-aid would be based on the difference as follows:—

Average Selling Price per ton f.o.b., Mauritius.						Grant-in-aid per ton.		
£	s.	d.				£	s.	d.
13	0	0	...	...	...	Nil		
12	15	0	...	...	...	0	5	0
12	10	0	...	...	...	0	10	0
12	5	0	...	...	...	0	15	0
12	0	0	...	...	...	1	0	0
11	15	0	...	...	...	1	5	0
11	10	0	...	...	...	1	10	0
11	5	0	...	...	...	1	15	0
11	0	0	...	...	...	2	0	0

For the present year's crop (1929-30) it may be taken that the selling price is about £12 per ton, while the cost of production is £13, consequently the calculated loss is £1 per ton. As the crop will be some 235,000 tons, this would entail a grant-in-aid in 1930 of about £235,000.

The grant for 1931 would be determined by the selling price in 1930, and the amount of the crop. If the selling price rose to £12 10s. per ton f.o.b., the calculated loss would be 10s. per ton, and the grant-in-aid, if the crop were of the same size as that of this year, would be £117,500; or nil if the selling price rose to £13 a ton or over.

10. It remains to be decided how the selling price is to be determined. This might be taken as the average price for the season for raw sugar realized by the Mauritius Sugar Syndicate (a body established under Ordinance No. 9 of 1929). This may readily be checked by ascertaining from such reliable firms of sugar brokers as Czarnikow or others the average price realized during the same period for Cuban sugar of 96° polarization, and from that calculating the equivalent value of Mauritius sugar not exceeding 99°

polarization. This is readily done by adding 4s. 6d. per cwt. to the f.o.b. price of Cuban 96°; this being the manner in which London buyers now ascertain the price to be paid for Mauritius sugar. The price being ascertained for the season, all that would be necessary would be for the Government of Mauritius, instructed by the Imperial Government, to announce that the grant-in-aid to be paid to the sugar industry of Mauritius in the year in question will be a certain stated amount per ton of sugar produced; amounting in the aggregate to a stated sum. It would not appear necessary to refer the matter to any local authority, the Government's statement being decisive and final.

Manner of distributing Grant-in-aid.

11. The question arises as to the distribution of the grant-in-aid. After full consideration I am of the opinion that the best course will be to pay it direct to each factory in proportion to the duly certified amount of sugar produced by the factory. The certificate might be signed by the Manager of the factory, and by a Government Inspector. There should be no real difficulty in ascertaining correctly the amount of sugar produced, and direct payment would obviate the intervention of agents and possible deductions of commissions, etc., or the diversion of the grants from the desired channels.

I am not apprehensive of injustice arising from the payment of the grant-in-aid entirely to the producer of sugar as distinguished from the grower of the canes. It would seem that when the price of sugar is low, a condition which is necessarily presupposed, there is a tendency here to pay a somewhat higher price for canes than conditions warrant. Some factories have undoubtedly been paying a relatively high price for canes. This condition is accentuated by the keen competition for canes on the part of the factories, few of which are supplied with canes up to their full capacity. It is to be observed that all of the factories are attached to plantations producing canes and only buy a portion, though admittedly a large portion, of the canes manipulated. A considerable quantity of cane passes through the hands of middlemen who buy from small growers and sell to the factories.

Conditions of Grant-in-aid.

12. It would be well to attach conditions to the receipt of these grants: these conditions should be stated on the form of receipt to be signed by each recipient of a grant-in-aid.

The following conditions appear to me to be desirable:—

- (a) Each recipient should undertake to keep accounts in a manner approved by the Government, and these accounts should be open to confidential inspection by properly accredited Government officers at any time the Government desires.

Recipients must also prepare proper annual balance-sheets with profit and loss accounts in a manner approved by the Government. Specimen sheets of suitable forms of accounts are attached. (*See Annexure VI*.*)

(b) It should be a condition of the grants that each recipient factory must set aside, as a reserve fund, a sum equal to not less than one per cent. of the average value, as determined in accordance with paragraph 10 herein, of the total sugar output of the factory in each year, until a total reserve fund is built up equal to not less than one-third of the average value, calculated over five years, of the amount of sugar so produced.

(c) The reserve fund must be invested in "Trustee Securities" or other securities approved by the Government. The reserve fund may only be expended, with the written consent of the Governor in Executive Council, in order to meet extraordinary expenditure consequent on circumstances arising from calamity or disaster, or such other circumstances as the Governor in Executive Council may consider fit and proper.

(d) As it is the intention of these grants to make provision for the payment of reasonable charges or expenses incurred during the year, the extent to which these charges or expenses have, or have not, been discharged by means of the grant-in-aid will be taken into account on the inspection of the accounts by the Government.

(e) The recipient should agree that the Governor may withhold the whole or any portion of a grant-in-aid in the event of it being proved to his satisfaction that the grant of a current or of a previous year has been misapplied, or that the conditions agreed to have not been fulfilled by the recipient.

13. In urging these claims for relief I must point out that in ascertaining the cost of production no mortgage interest has been included, though interest on advances for working expenses is included where necessary. Furthermore no interest on capital has been included, nor has there been included any allowance for profit that might reasonably be expected to accrue from the carrying on of the business of sugar production. If such grants as I have advocated are conceded, they will only serve to keep the industry afloat until better times arise.

Duration of Grant-in-aid.

14. In order to afford a proper sense of security, I trust that it will be found possible to ensure that the grants may be continued for a period of not less than five years.

PORT LOUIS,
MAURITIUS.

FRANCIS WATTS.

20th December, 1929.

ANNEXURE I.

THE COST OF PRODUCTION.

1. The question of the cost of production of sugar in Mauritius has been examined with considerable care and, after a prolonged attempt to ascertain with some degree of accuracy a general average cost of the whole Island, I have arrived at the conclusion that the cost amounts, as near as can be ascertained, to £13 1s. 2d. per ton f.o.b. or Rs.8.98 per cwt. (Rs.13.75 to £), as stated in paragraph 2 of the general report.

2. It is of interest to note that the question of the cost of production of sugar has received world-wide consideration. An American Governmental Commission with full authority carried out a searching investigation into the costs of production in the beet-growing States of America and in Louisiana, Cuba, Porto Rico, and Hawaii in 1923. It was officially stated that they were unable to arrive at a result from which any conclusion of value could be drawn. A further attempt was made at the instance of the Economic Committee of the League of Nations by Dr. H. C. Prinsen Geerlings in 1928, details of which appear in the League of Nations publication 1929. 11. 20. *Sugar*, compiled by the Economic Committee at Geneva in 1929. In this the difficulty of determining this point was fully set out.

3. In undertaking this enquiry, figures were taken for the year 1928-29, normal as regards general conditions but with a crop slightly over the average of the last five years.

The 1928-29 crop was some 250,000 tons, as against the average for the last five years of 230,000 tons; this included all the sugar made by any factory, whether 99½° white or 98½° raw.

4. Owing to the fact that the estate accounts in many cases are not kept on strict commercial accounting lines, a certain amount of difficulty was at first experienced in obtaining the necessary information of a uniform character.

In many cases the estate accounts are kept in good order, but in others there is scope for amendment and organization, and consequent benefit will accrue to the owners if such a course is adopted.

However, with the good will and co-operation of all parties to the extent of their placing all documents, books, and information at my disposal, these deficiencies have been overcome and, by judicious enquiries, observations, and comparisons, the figures submitted by them have been redrafted on modern and up-to-date accounting lines.

5. Each factory is attached to a plantation producing a certain amount of cane and purchasing the remainder of its requirements.

In making these calculations, account has been taken of the cost of cultivating the canes, the cost of their purchase when purchased, and the cost of the manufacture of the sugar. Such a unit is known as an estate.

Twenty-one factories out of a total of 43 have been selected with a view to obtaining a comprehensive range of the various classes and types. In this selection an attempt has also been made to take groups of factories in various districts, of a similar geographical or agricultural nature, and thus obtain a fairly selective list of each and all conditions of sugar growing and manufacturing in the Island.

Figures have been worked on an average mean to the extent of 57.5 per cent. of the total 1928-29 crop, covering in all some 143,776,142 kilos of sugar, of a valued cost of production of Rs.22,701,017.85 cents and resulting, as before stated, in an estimated cost of £13 1s. 2d. per ton f.o.b.

Averages were taken at successive points as the data became available. It was found that when the following percentages of the crop were considered the cost amounted to as follows :—

Percentage of Crop.							Cost of Production		
							£	s.	d.
33.0	...	...	...	...	...	...	13	0	0
37.6	...	...	...	...	...	...	12	17	8
39.3	...	...	...	...	...	...	12	17	4
44.7	...	...	...	...	...	...	12	17	8
47.5	...	...	...	...	...	...	12	16	8
57.5	...	...	...	...	...	...	13	1	2

6. Difficulties were experienced on account of the differences in practice and in the manner in charging items which might be regarded as capital expenditure, these sometimes being charged to the accounts of a single year.

The accounts were carefully scrutinized and actuarial adjustments were made, for these and other abnormal charges, to bring them on a more equitable and usually recognized basis.

7. In assessing the annual expenditure of the estates for the cost of production, the total expenditure of the estate (field and factory) for the year, locally known as *Faisance Valoir*, has been taken. This expenditure is the actual sum of money spent on the cultivation of the canes and the factory expenses in relation to the sugar made. In addition, general administration and town office charges have been added.

As stated in paragraph 6 above, the expenditure on capital and renewal works of a non-recurrent annual nature has been apportioned on an actuarial basis; such expenditure is locally known as "Extraordinary expenditure."

Interest on *Faisance Valoir* advances, i.e., interest payable for money advanced from time to time to the planter for cultivation and factory expenses, has been included where necessary; so also has interest on advances made by the Mauritius Sugar Syndicate, the selling agency, in respect of advances made by that body to

planters in respect of unsold sugar passed to the docks through the Syndicate for selling, when suitable offers are made.

Interest on mortgages has not been included in these calculations, as the degree to which the various estates are indebted in this relation varies considerably, some being quite free, others reasonably encumbered, and others heavily burdened.

No allowance has been made for depreciation in the proper sense of the term; no provision of this nature is made in the accounts as kept by the planters and factories in Mauritius at present.

In addition, there are what is known as f.o.b. charges, which include all the charges payable for placing the sugar from the factory on board ship. Transport to Port Louis from the factory is included in the *Faisance Valoir*.

These charges are enumerated below :—

CHARGES INCURRED IN SELLING SUGAR.

	Per cwt. f.o.b.	
Paid by the buyer on behalf of the planter :—	Rs.	
Export duty	0.3765	
Shipping	0.0750	
Cartage and weighing	0.0700	
Marking	0.0060	
Brokerage $\frac{3}{4}$ per cent.	0.0705	
Commission	0.0785	Rs.
		0.6765
Paid by the Syndicate on behalf of the planter :—		
Dock charges	0.1300	
Syndicate charges	0.2500	
		0.3800
Per cwt. Total charges		Rs.1.0565

The following example illustrates the "cash" result to the planter of a sale of sugar in Mauritius :—

If the London offer is Rs.8.35 per cwt. f.o.b. (at Rs.13.75 to £).

	Per cwt.	Per ton (long).
	Rs.	£ s. d.
the planter receives, cash	7.2935	or 10 12 0
and charges are paid	1.0565	1 10 10
London offer	Rs.8.35	£12 2 10

8. The cost of production given in paragraph 2 of the report is based on the general cost of approximately equal quantities of whites and raws. This I believe to be justified, for it is found that the extra quantity of raw sugar produced from a given quantity of cane is about 3 to 3.5 per cent. more than white,

while the extra cost of making one ton of white may be taken at 6s. more than $98\frac{1}{2}^{\circ}$ raw. The extra value of $99\frac{1}{2}^{\circ}$ Mauritius so-called white may be taken at about 6s. 11d. per ton more than $98\frac{1}{2}^{\circ}$, consequently the value of the gain in quantity practically off-sets the extra cost together with the extra value of white; any difference being well within the range of error encountered in making these calculations.

9. From such inquiries as have been made, it seems very evident that the minimum cost has now been reached. Many factories are withholding certain necessary repair works and improvements in the hopes of better days coming soon; salaries have been considerably reduced, and in the matter of wages considerable reductions have been made amounting, it is estimated, to an average reduction of 13 per cent.

Labour constitutes a large proportion of the total expenditure bill of any sugar concern, and the present low price of production is to a great extent due to the reduction of wages.

10. Difficulties are experienced from the fact that at present many planters are unable to pay cash or settle on short-term credit for stores purchased and consequently have to pay interest for an extended credit of six months or more; the importers have of necessity to ask a higher price to cover the interest that they themselves will have to pay the outside suppliers for credit.

Instances are quoted of rice, selling for cash at Rs.15 per bag, selling at Rs.15.60 on a credit sale payable after 6 months, and even a difference of 90 cents has been charged between cash and credit sales. This is important, as rations are given in kind to a good proportion of labour, namely, the monthly paid staff, and in consequence the price of the commodities is affecting the cost of production considerably. Attempts have been made to induce the East Indian to eat other food-stuffs such as maize, manioc, etc., but rice is his staple food and it is difficult to change a nation's habits.

11. It may not be out of place here to make clear the method of financing planters in Mauritius, for the present financial stringency is making itself felt in that interests are high in accordance with the indebtedness and risk attached to the business financed.

A few estates are not encumbered in any way by mortgages and are financed by their own working capital. Other estates are slightly encumbered with mortgage or other debt and are financed by the banks or brokers, commonly known as a *Bailleur de Fonds*; and lastly there are the estates which are heavily mortgaged and also indebted to the *Bailleur de Fonds*.

The position and functions of the *Bailleur de Fonds* are set out in paragraphs 56 to 59 of the Report of the Mauritius Royal Commission, 1909,* as follows:—

“ 56. But besides paying high interest on the mortgage debt, which is of the nature of a fixed charge, the great majority

* Cd. 5185 of 1910.

of the owners have practically no working capital and run their estates on borrowed money. By the end of the hurricane season, i.e., in April, they have exhausted the funds derived from the last crop and have to apply to a financial agent for assistance. This agent is called in Mauritius a *Bailleur de Fonds*. He is often a local merchant or produce-broker, he has generally a substantial amount of liquid capital of his own as well as good credit at one or other of the two local banks, and when, as usually happens, the total amount of the money required for the estates which he is financing exceeds his own available resources, he borrows the balance from the bank, giving his own name and that of the estate-owner as security. The planter submits to the *Bailleur de Fonds* a kind of budget for the coming year showing what he expects to have to pay for interest and other fixed charges, wages of employés and labourers, manure, rice, and other stores, and in many cases for household and personal expenditure—in fact for all his anticipated outgoings during the year. He gives the *Bailleur de Fonds* the selling of the sugar produced on the estate and the right to demand, if necessary, a mortgage on the estate for any balance which may remain owing at the close of the year's transactions. The *Bailleur de Fonds* then becomes practically the business manager of the estate. He supplies the owner monthly with the funds required for fixed charges, wages, etc., he buys and pays for the manure, rice, and stores required for the estate, and, as the sugar is produced, he sells it and credits the owner with the amount realized. On all his outgoings in respect of the estate he debits the owner with interest at the agreed rate, and on the other side of the account credits him with interest at the same rate on the sums received for the sale of produce. At the end of the year, the account is made up and the owner receives whatever balance there may be owing to him, or, if the balance is a debit one, gives the *Bailleur de Fonds* security for the amount.

“ 57. The charges which the estate-owner has to pay for this combination of financial accommodation and business management naturally vary with individual cases. From the evidence which we have received, the usual arrangement appears to be as follows : The *Bailleur de Fonds* charges interest in account current at bank rate, which is usually about 10 per cent. ; he also charges a commission, which is generally $2\frac{1}{2}$ per cent., on the amount realized by the sale of the sugar. If he is also a produce broker, he conducts the actual sale of the sugar and charges the usual $\frac{1}{2}$ per cent. on the sale price to the seller and $\frac{1}{2}$ per cent. to the buyer. If he is not, he employs a broker to sell the sugar and allows him the $\frac{1}{2}$ per cent. brokerage, charging it to the estate-owner.

“ 58. If the estate is not in good condition and the owner's affairs are involved—in short, if the risks run by the *Bailleur de*

Fonds and the needs of the borrower are greater than usual—the *Bailleur de Fonds* may charge for the loan $\frac{1}{2}$ or 1 per cent. above the bank rate; if, on the other hand, the estate-owner has money, and goes to a *Bailleur de Fonds* more for convenience than of necessity, the latter may conduct the business of the estate for $1\frac{1}{2}$, 1, or even $\frac{1}{2}$ per cent. commission instead of $2\frac{1}{2}$ per cent.

“ 59. This system of financing estates is firmly established in Mauritius, though during the last year or two a few owners who formerly employed it appear to have made successful endeavours to carry on their estates without having recourse to a *Bailleur de Fonds*. . . .”

It will, therefore, be seen that the continuance of the present low prices for sugar, unless alleviated by some outside assistance, will tend to increase the cost of production and make the present position worse even to the extent of compelling the *Bailleurs de Fonds* to withdraw their assistance owing to accumulated arrears of interests on sums loaned.

In some cases already, the *Bailleur de Fonds* has cut his losses and taken over the property in settlement of the money due to him, such a course being the only way open for him to recover some of the money advanced.

12. The cost of production having been ascertained, as stated, to be about £13 1s. 2d. per ton f.o.b., or Rs.8.98 per cwt., the following table will illustrate the relationship this bears to the selling price :—

NET LOSS BETWEEN LONDON OFFER AND “ALL-IN ” COST PRICE OF
PLANTER.

	Per long Per cwt. ton.		
	Rs.	£	s. d.
London offer	8.35	12	2 10
Mauritius planter's “ all-in ” cost price	8.98	13	1 2
Net loss	0.63	0	18 4

ANNEXURE II.

THE SELLING PRICE OF SUGAR.

1. The average selling price for the current year 1929-30 has been assessed on the basis of information supplied by the Mauritius Sugar Syndicate on average offers made by the London buyers during the recent selling season, July to December, practically the whole of the crop having already been sold. As stated in paragraph 3 of the general report, this is taken as

£12 2s. 10d. per ton f.o.b., or, in Mauritius currency, Rs.8.35 per cwt.

2. The London buyer bases his offer on the market price of Cuban sugar of 96° polarization. To this is added 4s. 6d. to raise the price to the equivalent value of Mauritius sugar not exceeding 99° polarization, including the share of preferential duty on Colonial sugars.

3. The method of selling sugar in Mauritius is as follows :—

Over 80 per cent. of the sugar produced belongs to planters who are members of a body known as the Mauritius Sugar Syndicate, established under Ordinance No. 9 of 1929, through which they sell their sugars. The remaining 20 per cent. is sold by the producers outside the Syndicate.

Sugar is sold, mostly in cargo lots, by the Syndicate from time to time as suitable offers are received.

4. There are about six local firms who act as buyers and sell to the London buyers on commission. From time to time these firms make offers to the Syndicate, which are accepted or declined as the Syndicate decides.

These offers are subject to what is known locally as “ Chamber of Commerce Terms.” This means that the offer is so much f.o.b., the seller (i.e., the planter) paying charges. In this way the planter through the Syndicate receives the full London offer but has to pay the f.o.b. charges shown in paragraph 7 of Annexure I. on the cost of production.

The local firms draw a commission of about 1 per cent., which is included in the f.o.b. charges.

5. The price received for Mauritius sugar is governed by the price of Cuban sugars, which practically represents the world's price. The Syndicate, being a planters' institution, makes the best sales possible and is a totally disinterested party, as no profits accrue or are charged on behalf of the agency.

Various Syndicate charges, amounting to some 21 to 25 rupee cents per cental of sugar sold, are deducted from the net price given to the planter : these cover cost of management, office rent, discounts, and charges incidental to the running of the Syndicate, full details of which are put in the yearly statement of the Syndicate's transactions.

6. As stated before, in the Annexure on the Cost of Production (paragraph 8), the tendency now in Mauritius is to make nearly all raw sugars; therefore in assessing the selling price we can accept as an average figure the selling price of raws as representative of the selling price for Mauritius sugars.

7. It is found that the average selling price for the current year has been Rs.8.35 per cwt. or £12 2s. 10d. per ton, and upon this figure the general loss sustained by the industry in the year 1929-30 is assessed.

ANNEXURE III.

METHODS OF CULTIVATION.

In what follows, an attempt is made to convey to the general reader an outline of the methods in vogue in regard to sugar-cane cultivation in the Colony.

1. Mauritius lies within the Tropics between latitudes S. 19° 50' and S. 20° 35'. The cultivation of sugar-cane is carried on from sea-level up to elevations around 1,500 feet, consequently the temperature and rainfall vary considerably in the cane-growing area, as will be seen from the following yearly normals :—

<i>Station.</i>	<i>Mean</i>	
	<i>temperature.</i>	<i>Rainfall.</i>
	<i>F.</i>	<i>Inches.</i>
Port Louis, sea-level	77.1	38.3
Observatory, 150 ft.	73.4	50.1
Beau Bassin, 750 ft.	71.7	50.5
Vacoas, 1,500 ft.	69.7	86.8
Alma Estate, 1,500 ft.	69.3	126.0
Curepipe, 1,830 ft.	67.3	124.4

These temperatures are very considerably below those of Java, with which comparison of cane production is often made, where the mean temperature is around 80° F., and below those of the West Indian islands.

2. The Island is visited periodically by cyclones which often prove very destructive to the cane crop; Mr. M. A. Walter, late Director of the Observatory, estimated the annual loss from this cause at an average of 4 per cent., equivalent to about 1½ million rupees; the actual loss on occasions being terrific.

3. The soil is lateritic, derived from the disintegration of the basaltic rock fundamental to the Island. This lateritic soil is underlain in most parts by an infertile subsoil which appears to possess toxic properties. Deep tillage is, therefore, inhibited and planters take care to avoid turning up the subsoil and mixing it with the fertile soil. Details were given to me of instances where attempts had been made to practise deep ploughing with disastrous results; the contentions of the planters seem to be well founded and to be supported by experimental work on the part of the Department of Agriculture.

The shallow fertile soil and its underlying infertile subsoil are very permeable by water, so that there is no necessity to dig surface drains, except in a few low-lying or wet situations.

4. The land is kept in very good tilth by hand cultivation with the hoe, a short-handled hoe being used, together with various forms of *pioche*, or by shallow ploughs or cultivators, and is usually

kept very free from weeds; weeding is accomplished to a large extent by manual hoe work and by shallow ploughs and cultivators.

5. In many parts of the Island the surface of the soil is covered with boulders of varying sizes, from those a few inches in diameter up to those measuring several feet across. Where these boulders are numerous, much labour is expended in clearing them off the land to be cultivated; this work forming a regular item of expenditure under the title *epierrage*. This may cost from 10s. to as much as £20 per acre and even more, and is carried out in various ways. In some instances the stones and boulders are piled in large heaps several feet across; in other cases they are placed in long rows, or walls, ranged at given distances apart, the canes being planted in the spaces thus cleared. In many instances the heaps of boulders are allowed permanently to occupy the positions in which they are placed; in others the walls of stones are pulled down each time the fields are to be replanted, and are re-erected on what was formerly the intervening space occupied by the growing canes. The intervening land is cultivated in the commonly accepted manner and planted with canes, four or more rows of canes occupying each interspace. The frequent tillage and stirring of the soil between the rows is found to be very beneficial.

6. There are two planting seasons recognized, namely, one from September to November for canes to be reaped when about 12 or 14 months old, known as *petite saison* canes, and the other from April to November for canes to be reaped in about 18 to 24 months, known as *grande saison* canes. As stated, the reaping season extends from about August to December.

First-crop canes are known in Mauritius as "virgin" or plant canes; subsequent growths are denominated "ratoons."

7. The canes are usually planted in shallow oblong holes prepared by means of the hoe, these holes being various sizes on different estates; they are about 8 or 10 inches deep and 9 inches to a foot wide, and vary in length from two feet up to several feet, according to the locality. In some instances a shallow furrow is opened with a light plough and the cane cuttings placed therein.

It is a common practice to place a substantial layer of a carefully-prepared mixture of filter-press cake and ashes at the bottom of each hole and to place the cane cuttings thereon. The cuttings are then lightly covered with earth and, finally, a layer of well-prepared farm-yard manure is placed over all: the quantities of manure thus applied being usually about 3 tons per acre of the mixture of filter-press cake and ashes, and from 3 to 5 tons of farm-yard manure. It is customary to apply chemical fertilizers about two and a-half or three months after planting, various mixtures being used, or either nitrate of soda or sulphate of ammonia.

8. In addition, chemical fertilizers are used extensively both for plant and ratoon canes. The following examples taken from the records of six estates represent the general practice :—

ESTATE I.

Plant or virgin canes.—

At planting, 50 kilos. nitrate of soda per acre.

Six or seven months later, 100 kilos. of a mixture of sulphate of ammonia and nitrate of potash.

Ratoon canes.—

1st. *Ratoons* : as growth starts, 50 kilos. nitrate of soda.

Later, 150 kilos. of a mixture of ammonium phosphate, nitrate of soda, and nitrate of potash.

2nd and all subsequent ratoons, 150 kilos. per acre of the last-named mixture.

ESTATE II.

Plant canes.—

Three months after planting, 112 kilos. nitrate of soda followed by 112 kilos. of either nitrate of soda or potash when rains set in.

Ratoon canes.—

All receive 224 kilos. of nitrate of soda.

ESTATE III.

Plant canes.—

Three months after planting, 125 kilos. of mixture of sulphate of ammonia, nitrate of soda, and nitrate of potash.

Ratoon canes.—

50 kilos. of above mixture, followed by a further 125 kilos. when cases show up.

ESTATE IV.

Plant canes.—

Three months after planting, 90 kilos. sulphate ammonia, 60 kilos. nitrate of potash, 150 kilos. phosphatic guano.

Ratoon canes.—

40 kilos. nitrate of potash, 60 kilos. sulphate of ammonia, 50 kilos. phosphatic guano.

ESTATE V.

Plant canes.—

During 18 months' growth receive 50 kilos. sulphate of ammonia, 45 kilos. nitrate of potash, 30 kilos. superphosphate.

Ratoon canes.—

Receive 150 kilos. of the same mixture.

ESTATE VI.

Plant canes.—

Two months after planting, 56 kilos. nitrate of soda.

Eight months after planting, 100 kilos. nitrate of soda.

Ratoon canes.—

All received 112 kilos. of a mixture containing sulphate of ammonia 53 per cent., nitrate of potash 32 per cent., superphosphate 15 per cent.

9. Practically all the molasses produced in the factories is used as fertilizer for the canes: it is diluted with about 30 per cent. of water and poured into the cane-holes either before planting or shortly afterwards, 3 to 4 tons per acre being the quantity usually applied.

In some cases the molasses is mixed with fine bagasse and then sent to the fields, while in others it is poured on the manure-heap together with water and allowed to take part in the fermentation of cane-tops, scum-cake, farm-yard manure, etc. These mixtures are used in planting to the extent of from 3 to 8 tons per acre, or even more.

Generally speaking, there is insufficient molasses to dress ratoons, but experiments have recently been made on a plantation in the north of the Island, using $6\frac{1}{2}$ tons of molasses on third ratoons: in another instance, an attempt is being made to give all the ratoon canes an application of molasses to the extent of 5 to 7 tons per acre, followed by irrigation water. In other instances, molasses is applied to ratoon canes immediately after the trash, or straw, has been buried and before the chemical fertilizer is applied.

It is claimed that considerable increase in yields is obtained from the use of molasses as a fertilizer, and, as will be recognized, active efforts are being made to ascertain the best methods of applying it. The claims concerning the increase of yield seem to be well founded; probably the successful use is connected with the peculiar nature of the soil and its complete aeration.

10. As the young canes make their appearance they are moulded up either by hand or by means of light ploughs, and this moulding is repeated from time to time as conditions require.

Mechanical tractors, often of the Clectrac, or similar, type, are used to haul the light ploughs and cultivators, and one is surprised at the effective manner in which these are handled on land which at first sight appears to be intractably stony. The use of motor-tractors in cultivation and for general haulage has been rendered necessary and hastened by the occurrence of the disease known as surra, which almost exterminated working farm-animals such as mules and oxen. In order to meet the deficiency of transport animals, tramways and light railways have been extensively introduced on all the estates.

Immediately after the outbreak of surra and the consequent death of a large proportion of the mules and oxen working on the estates, it became necessary to raise a loan, known as the Mechanical Transport Loan, 1903, of £185,185 at 5 per cent., repayable in 20 years, to enable advances to be made to the estates for the purposes of installing light railways and tramways. As the outcome there were, in 1928, 1,507 kilometres of rail and 222 locomotives on the estates. Portable rails are also extensively used.

11. After the plant, or virgin, canes have been cut, the land around and between the stools is cultivated, the old leaves, trash or straw from the canes that have been reaped is arranged between the old stools; in many cases it is placed in furrows, and often lightly buried in them, a practice which goes far to maintain the supply of organic matter in the soil.

12. Subsequently, chemical fertilizers are applied, the nature and quantity of which can be inferred from what has already been stated. It is evident from all this that there is no lack of attention to the question of the manuring of the canes; it would almost seem that in some respects there is a possibility that excessive quantities, especially of nitrogenous fertilizers, are employed, a point to which attention has been drawn by the Department of Agriculture. It is desirable that the matter should be carefully investigated both by the planters and by the Department, for it seems probable that some moderate saving can be effected in this connexion. The Department has already done some useful work in this direction. There is one point in this connexion that it may be well to bear in mind: the soils of the Colony are shallow and very permeable to water; it is possible that in seasons of heavy rain the nitrogenous plant food may be readily leached away, thus calling for heavy applications of fertilizer, and this may be one reason why large quantities are used.

13. Given favourable seasons, the yield of canes per acre is high; under very good conditions it may reach 50 to 60 tons per acre as virgin, or plant, canes, and 30 to 40 tons as ratoons. The average yield of plant canes on good estates may be taken to be about 30 tons for virgin canes and 22 tons for ratoons. The following data taken without special selection from estates' records are given as a general indication of the nature of the field returns.

STATEMENT SHOWING CROP RETURNS FROM SUNDRY ESTATES.
CROP 1929.

<i>Estates.</i>	<i>Maximum.</i>							<i>Minimum.</i>							<i>Average.*</i>						
	1.	2.	3.	4.	5.	6.	7.	1.	2.	3.	4.	5.	6.	7.	1.	2.	3.	4.	5.	6.	7.
Virgins	41.4	40.1	46.2	49.2	36.3			19.2	15.8	24.0	25.2	12.4			32.4	29.2	34.0	32.2	24.3		
1st Ratoons	32.7	35.9	29.7	33.3	45.0			13.1	13.2	13.3	23.1	15.5			22.0	23.7	21.9	22.5	19.8		
2nd Ratoons	38.3	29.4	29.6	26.2	31.3			14.9	8.2	14.3	18.0	10.0			26.0	18.8	21.9	22.5	19.8		
3rd Ratoons	30.7	26.4	31.5	23.3	35.6			13.9	11.9	6.1	14.4	14.2			24.6	18.2	18.9	18.2	22.0		
4th Ratoons	32.6	25.2	23.2	20.9	25.8			15.8	14.0	8.4	15.1	11.3			22.7	17.7	18.6	17.2	14.3		
5th Ratoons	28.8	19.4	17.0	20.8	22.0			15.4	16.9	14.4	15.0	12.2			22.5	17.9	17.6	16.4	15.8		
6th Ratoons		24.1	17.0		24.7				12.3	14.4	14.4	15.0				17.8	18.5				
7th Ratoons	22.8	19.8	17.0					15.8	17.9	14.4					19.0	18.6	17.6				
8th Ratoons		22.4	17.0						12.4	14.4						18.4	17.6				

* N.B.—The above figures for virgin canes are slightly lower than the actual yields as some are cut for “tops” for planting.

STATEMENT SHOWING CROP RETURNS FROM SUNDEY ESTATES.

CROP 1928.

Estates.	Maximum.							Minimum.							Average.*						
	1.	2.	3.	4.	5.	6.	7.	1.	2.	3.	4.	5.	6.	7.	1.	2.	3.	4.	5.	6.	7.
Virgins	35.5	45.5	43.8	30.9	41.0			15.8	20.3	17.3	24.2	17.3			28.9	28.1	34.2	27.2	25.8		
1st Ratoons	33.7	24.3	30.4	33.0	36.8			17.0	12.0	20.1	24.0	18.2			28.1	18.7	24.8	28.3	26.7		
2nd Ratoons	33.1	22.3	30.4	28.7	35.2			22.1	10.8	14.6	19.1	17.4			27.4	18.3	22.8	22.9	26.3		
3rd Ratoons	33.4	21.0	25.6	24.5	27.4			19.8	13.2	11.2	14.0	13.0			28.2	17.9	20.1	18.3	24.9		
4th Ratoons	34.3	21.1	25.6	26.0	29.8			17.1	9.6	13.9	14.0	14.8			26.8	17.2	17.9	18.2	20.2		
5th Ratoons		22.6	30.0	18.7	26.9				10.5	15.4	15.5	15.1				17.4	18.3	16.3	23.6		
6th Ratoons	30.8	20.5	21.7					16.8	16.8	15.4		21.1			23.5	17.1	18.3		24.9		
7th Ratoons	24.1	21.6	21.7					20.1	16.0	15.4					23.5	18.4	18.3				
8th Ratoons	24.0		21.7					15.2		15.4					18.2		18.3				

* N.B.—The above figures for virgin canes are slightly lower than the actual yields as some are cut for “tops” for planting.

STATEMENT SHOWING CROP RETURNS FROM SUNDRY ESTATES.

CROP 1927.

<i>Estates.</i>	<i>Maximum.</i>							<i>Minimum.</i>							<i>Average.*</i>						
	1.	2.	3.	4.	5.	6.	7.	1.	2.	3.	4.	5.	6.	7.	1.	2.	3.	4.	5.	6.	7.
Virgins	42.3	35.4	60.9	46.4	33.2			26.1	18.0	23.6	28.0	12.9			35.0	28.6	39.0	32.8	21.7		
1st Ratoons	37.0	36.7	36.2	38.2	37.1			13.3	11.5	16.4	20.2	13.7			23.7	19.7	27.2	27.3	25.4		
2nd Ratoons	33.4	21.3	29.1	30.8	30.2			15.6	10.8	14.5	16.0	12.0			24.5	18.0	21.9	18.5	21.0		
3rd Ratoons	31.4	20.8	25.9	25.3	25.3			13.3	7.0	11.3	10.0	10.2			24.2	16.0	18.7	15.3	18.1		
4th Ratoons		24.1	25.5	20.1	32.2				5.2	12.0	10.8	9.2				13.5	17.9	14.0	18.1		
5th Ratoons	26.2	14.9		18.0	23.5			12.0	8.2		10.1	14.9			21.4	14.6		13.4	18.9		
6th Ratoons	23.3	17.3			25.7			11.2	9.5			7.6			16.0	13.4			18.2		
7th Ratoons	26.2							14.3							18.1						
8th Ratoons	18.1							18.1													

* N.B.—The above figures for virgin canes are slightly lower than the actual yields as some are cut for “tops” for planting.

14. It may reasonably be concluded that these records bear adequate testimony to the general excellence of the agricultural work on the sugar estates: the fact that such large quantities of canes as 18 to 20 tons per acre are obtained from fifth and sixth ratoons is ample evidence of good work and of the fertility of the very shallow soils on which the canes are grown.

The production of ratoon canes is relatively inexpensive as compared with that of plant, or virgin, canes; the cost of their cultivation is comparatively small, the principal item of cost being that of light tillage and weeding and the provision of the fertilizers. In order to show the relative cost, the following examples have been taken, without special selection, from a certain number of estates. It will be seen that the cost of growing an acre of plant canes is approximately three times that of growing ratoons. But for the practice of extensive ratooning the losses incurred in producing sugar in times of low prices would be much greater.

It is estimated that out of the cost of growing ratoons about 25 per cent. is expended on fertilizer.

RELATIVE COSTS OF GROWING VIRGIN AND RATOON CANES.
CROP 1929.

<i>Estate.</i>	1.	2.	3.	4.	5.	6.	7.	8.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Virgins ...	613	526	546	492	486	370		
1st Ratoons ...	182	172	185	169		101		
2nd Ratoons ...	182	172	185	169				
3rd Ratoons ...	182	172	185	169				
4th Ratoons ...	146	154	185	169				
5th Ratoons ...	146	154	185	169				
6th Ratoons ...	146	154	185	169				
7th Ratoons ...	146		185	169				
8th Ratoons ...	146		185	169				

15. After the final crop of ratoons has been reaped it is a frequent practice to grow a leguminous crop and to bury the brush as a green dressing, and in this way the land is rested from canes for several months; sometimes for over a year.

16. The agricultural practices in vogue result in returning to the soil large quantities of organic matter, the conservation of the greater part of the mineral matter taken from the soil by the canes, the utilization of factory waste-products, including the filter-press cake, the ashes from the furnaces, and the molasses with its content of potash and nitrogen, the ultimate return of the leaves and tops of the canes, either by direct burying or in the form of *fumier*. All of this tends to build up and maintain the fertility of the shallow soil on which the canes are grown.

17. Great attention is paid to the preparation of the *fumier*, or farm-yard manure. The system consists in making great heaps of cane tops, leaves or trash with grass, bush and other vegetable matter (sometimes cut up in a chaff-cutter) in considerable excess of the food requirements of the cattle, and allowing this to become

impregnated with the excreta of the animals, which are kept upon the heaps for a short time. The impregnated mass is removed and kept in great fermenting heaps, maintained thoroughly moist by the application of the drainings from the heaps, or of water. All this is often done under cover, but at times in the open; better control is effected under cover. This system, known as the Mauritius system, results in the production of quantities of farm-yard manure far in excess of that derived simply from producing the manure from stable litter, and is now extensively employed in other countries: its adoption, which permits of the conversion of large quantities of litter, bush and vegetable matter into valuable and well-rotted farm-yard manure is to be commended, for it is sound in principle and helps to off-set in no small degree the shortage of manure resulting from the increase of mechanical forms of transport and the decrease of the number of farm animals.

18. Several varieties of canes are cultivated, the principal being White Tanna, which, according to a census taken in 1925, occupied 58 per cent. of the cane area; if to that is added the 5 per cent. under Striped Tanna, the area then under Tanna varieties was 63 per cent. of the cane crop of the whole Island. Some estates had over 90 per cent. of their cane area planted in Tanna varieties, these canes having increased considerably in favour in recent years.

19. The incidence of the various cane varieties throughout the Island has been investigated by the Department of Agriculture; it was found in 1925-26 to be as follows:—

	<i>Per Cent.</i>		<i>Per Cent.</i>
White Tanna	58	D. 109	3
D.K. 74	9	D. 130	3
55	8	33	1
131	8	Uba	1
Striped Tanna	5	Other varieties	4

The incidence in different districts varies greatly, as is seen from the following statement of the Department of Agriculture with reference to the distribution of White Tanna:—

<i>Localities.</i>	1915: <i>Per Cent.</i>	1925. <i>Per Cent.</i>
Pamplemousses and Riviere du Rempart ...	15	14
Flacq	48	78
Plaines Wilhems and Moka	64	85
Grand Port and Savanne	35	60
Black River	42	30

20. Of late, greatly increased attention is being given to the question of varieties; interest in this direction being stimulated to a considerable extent by the reports of the yields obtained from varieties in other countries, notably from the Java cane P.O.J. 2878, and more especially from the knowledge that the best means

of meeting the incidence of disease lies in the introduction of new varieties either immune or resistant to these diseases. Much work has been done by the Department of Agriculture in obtaining promising varieties from other countries, in investigating their value and suitability for Mauritius conditions, and in distributing them to planters. It should be stated that the Department is fully alive to the danger of introducing pests and diseases when canes are brought in from other countries: the introduction is now limited to the Department, which is provided with quarantine green-houses in which all newly-introduced canes are grown for a period to ascertain their freedom from disease before admitting them into general cultivation.

21. In addition to these efforts, a great deal has been done by the Department, and in some instances by planters themselves, in raising new canes from seed: a large number of new seedling canes have thus been introduced to the estates, some of which are proving quite valuable: information concerning them is freely placed at the disposal of the planters by the Department, and a number of trial plots have been established in co-operation with the planters on different estates throughout the Island in order to ascertain the local suitability of a large number of selected varieties: interest in new varieties is thus being considerably stimulated.

22. During recent years, fear has existed that some of the leading varieties of canes may be suffering from the presence of disease: the former Director of Agriculture, Dr. H. Tempany, drew attention to this and to the risk involved in dependence on a single variety of cane, or at least on a very limited number, as is the case in Mauritius. His remarks received a good deal of attention both on the part of the planters and of the Government, in consequence of which the matter was submitted for the consideration and advice of the Imperial Bureau of Mycology; as the outcome, it was arranged that Mr. S. F. Ashby of that Bureau, who has extensive first-hand knowledge of cane disease, should visit the Island to inquire into the incidence of diseases and to advise concerning them. Prior to this, the officers of the Department, notably the Botanist and Mycologist, Mr. E. F. S. Shepherd, had been working on the subject and had done much to clear the air and to pave the way for Mr. Ashby's inquiry: amongst other things, he had shown that there were two distinct diseases likely to be confused under the name gumming disease, namely, the true gumming disease of Australia and the Australian Leaf Scald. I understand that Mr. Ashby has confirmed Mr. Shepherd's work and that of the Department generally.

23. Mr. Ashby gave an interesting address (on 11th December, 1929) to the planters before leaving the Colony; from this I gather that he recognizes the presence of certain diseases which, if neglected, may be capable of doing much harm; he does not

appear to suggest that at the moment the industry is experiencing grave losses from these, and he also appears to think that the planters, with the assistance of the Department of Agriculture, can handle the situation without resorting to any violent or disruptive measures; he emphasizes the point that the exercise of careful and continuous attention is called for in order to prevent the situation from getting out of hand. He lays great stress on the study of the resistance of the varieties that are to be planted and the introduction of new and useful ones and, particularly, to avoid too great dependence on merely one or two varieties, the judicious cultivation of a reasonable number of varieties making for safety.

24. It is worth noting that, with the extensive ratooning practised in Mauritius, the fields are only replanted at intervals of from seven to eight years or more; in these circumstances it takes a considerable time to effect the general introduction of any variety.

25. Incidentally I may say that, owing to the vigilance of the officers of the Department of Agriculture, the presence of mosaic disease on certain imported canes was recognized before they were distributed; they were destroyed and the Colony saved from the introduction of a dreaded disease.

26. It is important to note that steps are being taken to put the work of the Department on a sound and better footing as regards the production of new seedling canes and the study of their characters. It is intended to reorganize the work of breeding new varieties of canes and to put this work on a proper scientific basis. To this end a trained Genetecist has been appointed, who, after visits to countries where cane-breeding work is being scientifically carried on, will take up work in the Colony. One of the officers of the Department, Mr. A. de Sornay, who will be associated with him in this work, has already visited the Sugar Experiment Station at Coimbatore in Southern India to make himself acquainted with the technique of the work there.

A Physiological Botanist is also to form part of the special staff. Further, in order that work in connexion with sugar-cane investigations may be placed on a proper scientific basis, a Soil Chemist has already been appointed. In order that he may be familiar with modern aspects of soil chemistry, he has spent a short time at Rothamsted.

Proper provision is to be made for the accommodation of these officers; they will co-operate with the work of the Department of Agriculture. When this work is well-established, Mauritius should be in a good position to investigate the problems connected with the growing of canes on proper scientific lines and still further strengthen its position. A substantial contribution towards the salaries of these officers and the cost of the investigations is being

made by the Empire Marketing Board; the remainder of the cost is being met by the Colony.

27. Some loss arises from the attacks of various insect pests of the sugar-cane. The officers of the Department of Agriculture are well-informed concerning these and the steps to be taken to control them. There is, however, one pest that is quite difficult to control which occurs extensively and is doing much damage in certain districts; I refer to the beetle *Phytalus Smithi*: it is the most serious pest affecting the sugar industry of the Colony.

28. It was first discovered in Mauritius in 1911, apparently having been accidentally introduced from the West Indies or South America; investigations made at the time of its discovery showed that there were then about 1,000 acres infected. In spite of the steps which were at once taken to control it, it steadily spread, until in 1929 it is estimated that some 43,700 acres are infested, or about one-fourth of the land under cane cultivation. The principal infections occur in the districts of Pamplemousses and Riviere du Rempart, with less intense infection scattered widely over the whole Island. It is estimated that intense infection occurs on about 2,500 acres, and it is in these areas that serious damage is being done.

The work of endeavouring to control this pest is undertaken and supervised by the Department of Agriculture, which has a special staff for this purpose consisting of the Director of Agriculture and the Entomologist, the Chief *Phytalus* Officer, with five Assistants and two Overseers.

The adult beetle buries itself in the soil during the day, emerging at night to feed; in this stage it is a feeble feeder and does little harm. The larva remains in the soil at the roots of the canes, which it attacks voraciously; where there are but one or two larvae at the base of a cane-stool the damage done is but small, but where they are numerous the damage may be very serious, amounting at times to the almost complete destruction of the crop.

29. Various methods are adopted with a view to controlling the pest. Advantage is taken of the habit of emergence of the adults at night systematically to collect them by hand; the collectors bring the beetles to recognized centres where they are paid for out of the funds officially provided. The number of beetles thus collected and destroyed has been as follows:—

1911-12	...	...	...	...	27,379,000
1912-13	...	...	...	...	16,257,000
1913-14	...	...	...	...	38,720,000
1914-15	...	...	...	...	58,622,000
1915-16	...	...	...	...	49,940,000
1916-17	...	...	...	...	76,318,000
1917-18	...	...	...	...	75,048,000
1918-19	...	...	...	...	70,560,000

1919-20	39,970,000
1920-21	24,579,000
1921-22	26,555,000
1922-23	45,082,000
1923-24	54,470,000
1924-25	68,716,000
1925-26	94,978,000
1926-27	118,241,000
1927-28	134,903,000
1928-29	252,613,000

30. The collecting of larvae from the soil has also been adopted recently, the following being the record of the number taken :—

1926-27	1,305,000
1927-28	20,935,000
1928-29	99,187,000

The official expenditure during the last two seasons has been, in 1927-28, £6,182, of which £5,300 was for beetles collected ; and in 1928-29, £8,328, of which £6,080 was for beetles collected.

In addition to this, quite large sums have been expended by the planters themselves apart from those derived from public funds.

31. Other methods of control have been attempted, including the use of such things as carbon-bisulphide, Paris green, vaporite, kerosene, creoline, carbolic acid, cyanogas, cianidra, and others. They have, however, proved of but limited use. A more important and more successful line of attack has been the introduction of insects parasitic upon the larvae. The wasp *Tiphia parallela* has been obtained from Barbados and established, after some considerable difficulty, in 1916 ; it seems to be doing good work, and some areas appear to have been cleared of *Phytalus* by its means, but, as evidenced by the numbers of beetles collected, the control at present exercised is very far from complete.

Another parasitic wasp of a similar character, *Elis thoracica* was introduced in 1917 and it is hoped that its activities will reinforce those of *Tiphia*.

32. There are other soil-grubs attacking the canes of Mauritius, but none of them does the serious damage caused by *Phytalus*.

The entomologists of the Département have done very good work in this and other directions. The successful introduction and establishing of *Typhia* and *Elis* is applied entomological work of a high order.

33. There is at present an investigator conducting research work in the West Indies and South America on the control of insects by means of appropriate parasites. I refer to Dr. J. G. Meyers, who is detailed for this duty for several months at the instance of the Institute of Parasitology, aided by the Government through the Empire Marketing Board ; amongst other things, his investigations will embrace the study of *Phytalus* and the

insects parasitic upon it; he will thus be in possession of first-hand valuable information of importance to Mauritius. I suggest, therefore, that full information should be placed before Dr. Meyers through appropriate channels concerning the incidence of *Phytalus* in Mauritius and the steps taken so far to control it, and that his advice be asked thereon. When his work in the West Indies is finished it would serve a very useful purpose if arrangements could be made for him to pay a visit to Mauritius in order to advise concerning *Phytalus* and similar pests.

34. The Department of Agriculture plays an important part in stimulating and maintaining agricultural progress. It has given much attention to matters connected with the sugar industry, and questions relating to methods of tilling and manuring have received continued attention and are the subject of experiment and demonstration. Similarly, much attention is given to the question of the varieties of canes suitable for local use; large collections of different varieties are maintained at Experiment Stations; and, as already stated, much work is in progress in trying out new varieties in co-operation with the planters. The further development of work of this nature along modern scientific lines, including the breeding of new canes, will, undoubtedly, prove to be of the first importance to the sugar industry. The extended scientific study of the peculiar soils of the Colony, together with the consequent advice relative to methods of handling and manuring these soils, cannot fail to be productive of valuable results.

35. At the same time, the activities of the Department in recognizing the presence of various pests and diseases, studying their life histories, devising means for their eradication and control and bringing these to the notice of planters, go far to ensure the safety of the sugar industry from the disastrous consequences of pests and diseases and help largely in dealing with those, such as *Phytalus*, which are difficult to control and require long-continued concerted action between the planters and the Department.

The Department has given assistance and useful advice in connexion with the technical side of sugar production, working in this way in close association with the Agricultural College.

36. The publications of the Department cover a wide range of subjects of importance to the sugar industry, including those on varieties of sugar-cane, on manurial experiments, on the use of molasses as a fertilizer, on irrigation of sugar-cane, on the pests and diseases of sugar-canes, on preparation and storage of farm-yard manure, and many others.

37. The Department is well-staffed and well-equipped and its attention is directed to the fundamental agricultural questions. Its work will, doubtless, regularly receive the attention of the newly-created Colonial Advisory Council of Agriculture, which will be in a position to scrutinize its activities and to advise with regard to them, thus minimizing the isolation which is so serious a matter.

The maintenance of a sound Department of Agriculture with its activities developed to the utmost and working in close association with the planting body should be the concern alike of the Government and of the planting community.

Irrigation.

38. For many years past it has been customary for favourably situated estates to use water from adjacent rivers for irrigating their canes. The water rights of the various riparian owners are defined and are jealously guarded. The water, under definite regulation, is led into small reservoirs on the estates and from them distributed to the fields. Considerable length of small masonry canals constructed for this purpose are widely met with about the country. Irrigation as thus practised is not very well controlled and, from casual observation, it would seem that a good deal of the water is wasted; there is no doubt, however, that this irrigation is of considerable service and that by its means it is possible to carry favourably situated canes over periods of drought and to maintain growth when rain is deficient, though, obviously, there is the defect that the supply of irrigation water is likely to be smallest in dry times, just when it is most needed.

In 1911 attention was directed to the establishment of irrigation works on a large scale, and the services of an officer having Indian experience of irrigation were obtained in 1913 to advise on the subject. As the outcome, it was decided to construct a reservoir at La Ferme with a storage capacity of 415 million cubic feet (2,594 million gallons) furnished with 21 miles of distributing channels, estimated to furnish water to some 3,000 acres in the Black River district in the western part of the Island. This work has been completed at a cost of Rs.1,686.150 and water has been available for some years.

39. Opinion appears to be divided as to the financial success of the scheme up to the present, and there have been complaints of shortage of water during times of drought, but recently the quantity of water collected has been augmented by directing the over-flow from Mare aux Vacoas to La Ferme, and it is estimated that the reservoir can be refilled three or four times a year. Doubtless the district to be irrigated presents some difficulties, and the fields have not been laid out and planted directly with a view to irrigation; furthermore, the users of the water have not had much experience of irrigation work, consequently it would seem that a good deal of the water has not been used to the best advantage.

40. In order to help to remedy some of these defects, an officer of the Department of Agriculture, Mr. Iesur, was recently sent to Hawaii to study the irrigation methods in successful use there. He has recently returned and a number of areas on estates have been placed under his control whereon he is demonstrating for the guidance of planters the methods which appear to be suitable for the districts in question. Three such demonstration plots on estates

are in operation, together with two on fields belonging to small Indian cultivators, and the establishment of several other similar plots is in contemplation. These plots are being properly laid out and planted so as to permit of irrigation being done in the correct way. It is expected that correct methods will result in far more economical use of the water available and will enable planters who are already doing some irrigation work to improve their methods very considerably.

41. A large scheme for the irrigation of lands in the northern part of the Island is in process of development. For this purpose, a storage reservoir, having a capacity of 202 million cubic feet (1.263 million gallons), has been constructed at La Nicoliere; this is estimated to be capable of irrigating about 7,500 acres, and recently water has become available from this source. It is proposed to add to the water available from the La Nicoliere reservoir by bringing into it the water from Midlands reservoir situated near the centre of the Island: this has a capacity of 760 million cubic feet (4,750 million gallons), thus greatly increasing the output. Work has already been begun on this extension, but it is understood that the financial aspects are causing some anxiety. It is estimated that this northern scheme, when completed, will cost in the neighbourhood of £600,000. The position at the moment is the subject of Government enquiry.

42. At present the work of irrigation may be regarded as being in the experimental stage. It was undoubtedly a wise proceeding to send a local officer to acquire detailed information regarding the methods in use in Hawaii, and it is anticipated that the Department of Agriculture, having his services at its disposal, will be able to help the planters to put into operation more precise and better methods of working. In view of the very considerable sums of money now invested in irrigation work, the matter is of much importance.

Small Cultivators.

43. The foregoing remarks apply to the regularly-organized estates. Of recent years, a large area of the cane-land has passed into the hands of small cultivators, who are almost entirely East Indians; the area so owned has fluctuated somewhat; in 1922 it amounted to 80,150 acres, or 46.2 per cent. of the land under cane cultivation, since then it has shown a slight tendency to fall, being 68,019 acres in 1928, or 43.1 per cent. of the total cane cultivation. The yield of canes obtained by these small cultivators is low, and it is estimated that, while occupying 43 per cent. of the area, they only produce about 25 per cent. of the crop. Some East Indians are men of substance, holding comparatively large acreages, and many of them work their land well, copying closely the methods adopted on the well-established estates. On the other hand, many, and numerically the greater number, occupy small holdings and, being for the most part without adequate capital, their methods of culti-

vation are poor and their yields small, ranging from around 7 to 9 tons of cane per acre.

44. There is no doubt that when the larger estates parted with their land to small cultivators there was a tendency to dispose of the poorer portions, so that much of the land in possession of the small cultivator is below the average fertility, and, as the methods of cultivation are poor, the results are necessarily low. In this way the average production of sugar per acre in the Colony is depressed and gives rise to the impression that the general agricultural work is poor. I think it is desirable to consider the agricultural problem in its two aspects, namely, the work done by the well-organized estates, which, as I have endeavoured to show, is good, and the work of the small cultivator, which is productive of but small returns.

45. If it were possible to effect marked improvements in the agricultural methods of the small cultivators, the general output of the Colony might be considerably raised, but this will be a very difficult thing to do. The methods and outlook of the small East Indian cultivator differ markedly from those of the European cultivator: he has little or no capital and relies largely on the co-operation of all the members of his family for performing the work in his fields. In this way little money passes by way of wages: the whole family lives off the small-holding. Under such a system the manuring of the fields is imperfect, though often some attempt is made to prepare and apply farm-yard manure, but there is strong temptation for the small cultivator to sell such farm-yard manure as he can produce instead of using it on his own field. In some instances the better class of small cultivators buy chemical fertilizers.

46. In fact, amongst the East India cultivators all grades exist from the larger, who, being able to procure capital, work their lands very much on the lines adopted on the well-established estates, getting yields of from 15 or 20 tons of cane per acre, or over, down to the smallest, who, having no capital, work their land with the aid of their families, living a hand-to-mouth existence and producing often only about 7 tons of canes per acre.

The small cultivators often supplement their incomes by growing other crops in addition to canes, such as food-crops or tobacco.

The best methods of improving the status of the small cultivator would appear to lie in the application of steady, well-considered advice brought to him by means of instructors familiar with his modes of thought and outlook and speaking his language. It is probably of very little use to attempt to convey instruction to him through English-speaking instructors, who will either not be listened to or not understood and whose advice will not be followed. Some good would probably result from the establishment of a few demonstration stations in different parts of the Island, where simple demonstrations of good methods of working small-holdings

could be demonstrated; these would also serve as centres where the instructors could meet the small cultivators regularly and discuss with them the methods of the demonstration plot and of their small-holdings. The work of the demonstration plot should be kept on the simplest lines and nothing spectacular should be attempted. It should not be expected to play the part of an experiment station.

47. At this demonstration station the officers of the Department of Agriculture in their several degrees could guide the ideas of the small-holders in respect to the financial aspects of the work, explaining how the money coming in from the crop may be utilized and how this may be supplemented by means of money obtainable through such agencies as Agricultural Banks and Agricultural Credit Societies.

Through these centres information would also be disseminated with regard to the best varieties of cane to cultivate and the methods to be followed in controlling pests and diseases.

With care, patience, and sympathetic knowledge it would seem possible to build up an important division of the Department of Agriculture devoted to the affairs of the small cultivators; a matter well worth considering when it is remembered that they occupy 43 per cent. of the area cultivated in canes in addition to other land.

48. Agricultural Co-operative Credit Societies are already in existence under the control of the Department of Agriculture. The system under which they work was inaugurated in 1912 as the outcome of recommendations made by the Royal Commission of 1909; their work is regulated by Ordinance No. 4 of 1913 and by the rules made thereunder.

The Director of Agriculture is the Registrar of the Societies and is assisted by an Inspector.

49. At the end of June, 1928, there were 26 Societies with a total membership of 2,492, an average of 96 per Society. 1,507 members were taking loans of an average amount of Rs.173 per person. The total amount of loans made to members at that date was Rs.261,227, or a mean per Society of Rs.10,047. Out of this sum, Rs.109,804 was overdue, making a mean of Rs.4,223 per Society.

50. The total liabilities of all the Societies together were Rs.292,520 (or a mean of Rs.11,251 per Society), and the total assets amounted to Rs.277,479 (or a mean of Rs.10,672 per Society), leaving an excess of assets over liabilities of Rs.15,041 (or a mean of Rs.579 per Society).

The total Reserve Fund of the Societies stood in 1928 at Rs.171,743 and is an increase on the last year.

51. With a view to remedying the practice which had existed of excessive liberality with which loans had been made, coupled with extensions of time for repayments of such loans, a revised

system, based on a paper published by the Joint Registrar of Co-operative Credit Societies in Ceylon, was introduced in 1928-29, the result of which has yet to be reported upon.

52. It is to be hoped, however, that the changes recently introduced will check abuses and render the work of the Societies more efficient and useful. The matter seems to be of such importance in relation to the small East Indian cultivator that one hopes it will be kept prominently in mind.

It is well known that much of the success of Societies of this nature in Europe and many other parts of the world has been due to their adherence to the principle of the Raiffeisen system, according to which "no dividends or distribution of profits is allowed under any circumstances. One of the essential features of the organization is that individuals are to derive no benefit except the privilege of borrowing, and every farthing which is left over out of the transaction is rigorously claimed for the reserve fund, which is an entirely peculiar feature. It belongs wholly to the bank and must not be shared out on any pretence. It is really the backbone of the whole system" (W. Fawcett, Impl. Dept. Agr. Pamphlet No. 35, p. 29, Agricultural Banks).

53. The principles of the Raiffeisen system are not applied to the Mauritius banks. It is observed that the members of several of these Societies decided to forgo their dividend in 1927-28 and thus to reduce the rates of interest charged on loans, thereby supplying their members with funds for agricultural purposes at low rates.

In some cases, however, the members are persistent in regarding money paid for shares as an investment and are very disappointed if no dividends are forthcoming.

If the principles of the Raiffeisen system can be adopted, it would seem that the position would be strengthened and some abuses removed.

54. It is considered that much can be done to help the small cultivator to improve his land and increase his yields if the proposed Agricultural instructors co-operate with the Inspector of the Co-operative Credit Societies.

As a result of the demonstration centres the peasants will see what can be done by expending a little money on their land in the way of manuring and irrigation, and the resultant financial gain to themselves. The Co-operative Societies are there to help them, and sound advice will be available as to how to utilize them with profit.

ANNEXURE IV.

THE MANUFACTURE OF SUGAR.

1. Formerly, the general practice in Mauritius was to make high-grade sugars, some of them good quality whites, others of lower quality, but all of them polarizing over 99°. These sugars found

a market in the United Kingdom, a small quantity going into direct consumption as grocery sugar, the larger part being sold to manufacturers of sugared products, such as jams, biscuits, syrups, sweetmeats, chocolates, and other commodities in which the employment of the highest grade of refined white sugar is not essential: what was not disposed of for these purposes was sold to the refiners, who were glad to obtain sugar of so high a quality for refining. In this way the sugar-producers of Mauritius have set themselves the task of making sugar of high quality and thus had acquired a considerable degree of skill in sugar-making.

2. The tariff changes made in the United Kingdom in 1928 seriously disturbed this trade, for they imposed increased rates of duty on sugars testing over 99° , the object being to protect British refiners against the importation of high-grade sugars, such as might go into direct consumption without passing through the hands of the refiners. These changes placed the high-grade sugars of Mauritius at a disadvantage, to a large extent excluding them from the United Kingdom; consequently the efforts of the Mauritius sugar-producers are now directed towards the making of sugars of lower polariscopic test and they have taken to the manufacture of so-called "raws", which are, however, of higher quality than the raw sugars of Cuba, the West Indies, and other countries, which usually have a polarization of 96° or 97° . The "raw" sugars of Mauritius usually test about 98.5° , the object of the sugar-maker being to get just below 99° , above which the higher rate of duty takes effect. The skill acquired in making white sugars now stands the Mauritians in good stead, for their so-called "raw" sugars are of a high quality, readily taken by the refiners at a premium.

3. Formerly, the white sugars of Mauritius found a good market in India, but they were displaced from that market during the Great War, their place being taken by Javan sugars: up to the present, Mauritius has not been able to get back into the Indian market, for Mauritius sugar there enjoys no preferential treatment as compared with that of Java. It would be of great benefit to Mauritius if it were possible to regain at least a portion of the Indian market, for not only would the additional market be very welcome, but it would help to relieve the position as regards monetary exchange. At present, Mauritius imports large quantities of material from India, including rice, pulse, sugar bags, and a number of other commodities; the imports from India during the last five years being valued at Rs.22,519,175 (or £1,688,938) per annum. Mauritius has nothing to send to India in return, consequently it is necessary to make monetary remittances from Mauritius to India at some cost: serious inconvenience is experienced and the prices of Indian commodities are enhanced in Mauritius; a serious matter in regard to rice. It would be of great benefit if something could be done to reopen the Indian market to Mauritius sugar, and it is hoped that the matter will have the attention of the Governments concerned.

Two points deserve consideration in this connection ; Mauritius sugar is specially suited to the requirements of the Indian market, and Mauritius out of a population of 376,000 has an East Indian population of some 265,000, most of whom are engaged in sugar production.

4. The quantity of sugar produced in Mauritius during the past five years has been as follows :—

						<i>Tons.</i>
1929	...	...	...	...	...	237,000
1928	...	...	...	...	...	250,000
1927	...	...	...	...	...	215,000
1926	...	...	...	...	...	191,000 (Cyclone).
1925	...	...	...	...	...	239,000

There are 43 sugar factories in operation, having the following capacities :—

1	...	15,000 tons.
9	...	7,500 to 10,000 tons.
16	...	5,000 to 7,500 tons.
17	...	under 5,000 tons.
<hr/>		
43		
<hr/>		

As has been stated in the main report, these factories are, for the most part, fitted with machinery of a fairly efficient character, maintained in good order by very capable local engineers and mechanics. A certain amount of the machinery is new, but some of it is old and could be renewed to advantage if the prospects of the sugar industry were favourable and money were available.

All the factories are provided with multiple effect evaporators, vacuum pans, crystallizers, centrifugals, and the usual equipment of modern sugar-factories. Many of the factories are also equipped with sugar driers : these are mostly of the vertical, non-rotary type.

All the factories, with the exception of one or two, are provided with derricks for transferring the canes to the cane carriers of the mills : nearly all of these are of type made by the American Hoist Co.

Multitubular boilers are employed in the factories ; water-tube boilers do not appear to have been introduced as, at present working, there does not appear to be any shortage of fuel. The chimneys of the factories are usually short and are provided with exhaust fans for maintaining sufficient draught. Economizers or feed-water heaters are a common feature of the equipment.

5. By mutual agreement the data relating to the work of the several factories are submitted to the Department of Agriculture for publication. When collecting the data this year, Mr. L. Baissac and his assistant, Mr. Avicé, went to great pains to secure the data for the past five years and to collate them into suitable tables for ready reference and comparison so as to enable me to

obtain an insight into the working of all the factories : in this way a formidable array of figures has been presented to me, far too extensive to permit of detailed reproduction here. The salient features have been abstracted, and from this it is possible to form an idea of the nature of the work of each factory as regards the mill work and the boiling-house efficiency.

6. It is a matter of some difficulty to make comparisons regarding the boiling-house efficiency because, while some factories are now making only raw sugar and no white sugar, or only an unimportant quantity, a few, for various reasons, are still making a considerable proportion of white ; it is expected, however, that these will diminish in number if the existing tariff position is maintained.

In what follows, for the purpose of comparison, those factories making a relatively large proportion of white sugar have been considered by themselves, and separate comparison made between them and between those making raw sugar. A factory making white sugar may be expected to show a slightly lower boiling-house recovery than one making "raws". In compiling the list of "raw" sugar factories, those making a small, unimportant quantity of white sugar have been included amongst the "raw" sugar factories, the necessary small correction being made in their statements of boiling-house recoveries. Similarly, the records of the white sugar factories making a small quantity of "raws" have been corrected in like manner.

7. Table I deals with "raw" sugar factories. These are arranged in the order of their recovery of sugar from the canes. In the second column the mill recovery is recorded, i.e., the proportion of the total juice of the cane which is expressed by the mills : affixed to these are figures showing the order in which these factories stand in regard to their mill work. In the third column is recorded the percentage of commercial sugar recovered from 100 parts of sugar in the juice. This is termed the boiling-house recovery ; in this case, also, figures are affixed showing the order of priority.

Inspection of this table gives useful information. It is possible to judge the extent to which the recovery of sugar is influenced by the efficiency of the mills and by the boiling-house work. The factories standing high in the list, as arranged on the basis of total recovery, for the most part, stand high as regards their mill work and boiling-house recovery. Where this is not the case it points to some defect which should have the consideration of the owners.

Reference is made in the last column to the nature of the mill equipment. The figures indicate the number of rollers in the mill train, and the presence of cane knives is shown by the letter K. The information given in this column may be taken into account in judging the nature of the mill work.

For satisfactory performance it may be tentatively suggested that mill work should be 95.3 or over, and boiling-house recovery 90.4 or over. Inspection will show what factories fall below these standards, and will afford information as to the direction in which improvements should be effected :—

Out of 41 factories, 5 work 20 hours or over per day.
 19 work 16 to 20 hours or over per day.
 16 work 12 to 16 hours or over per day.
 1 works under 12 hours per day.

TABLE I.
 RAW SUGAR FACTORIES.

<i>Factories.</i>	<i>Statistical Order.</i>	<i>Total Recovery Raw Sugar.</i>	<i>Statistical Order.</i>	<i>Mill Recovery</i>	<i>Statistical Order.</i>	<i>Boiling House Recovery.</i>	<i>Mill Equip- ment.</i>
1	1	88.0	2	95.3	2	92.4	12 K.
2	2	87.7	1	95.6	3	91.7	14
3	3	87.1	4	95.1	4	91.5	11
4	4	86.4	5	95.0	7	91.0	14
5	4	86.4	5	95.0	8	90.9	12
6	5	86.2	11	94.3	5	91.2	12 K.
7	5	86.2	1	95.6	11	90.2	11
8	6	85.9	14	93.8	4	91.6	9 K.
9	6	85.9	2	95.3	12	90.1	14 K.
10	7	85.8	7	94.8	10	90.5	11
11	8	85.4	21	92.0	1	92.8	8
12	9	85.3	11	94.3	10	90.5	11
13	10	85.1	8	94.6	14	89.9	11 K.
14	10	85.1	14	93.8	9	90.7	9 K.
15	10	85.1	1	95.6	19	89.0	9
16	11	84.9	6	94.9	17	89.5	11
17	12	84.8	2	95.3	19	89.0	9 K.
18	13	84.5	17	92.8	6	91.1	9 K.
19	14	84.4	12	94.2	13	90.0	11 K.
20	14	84.4	3	95.2	21	88.6	12
21	15	84.3	14	93.8	15	89.9	12
22	16	84.1	13	93.9	17	89.5	11
23	16	84.1	2	95.3	14	89.9	9 K.
24	17	83.7	6	94.9	22	88.2	11 K.
25	18	83.6	18	92.7	11	90.2	11
26	19	83.2	9	94.5	23	88.0	9
27	20	82.9	16	93.0	18	89.1	12 K.
28	21	82.7	7	94.8	26	87.2	12
29	22	82.4	11	94.3	25	87.3	11
30	23	82.1	20	92.5	20	88.7	11
31	24	81.9	10	94.4	27	86.7	9
32	24	81.9	13	93.9	26	87.2	11
33	24	81.9	22	91.3	16	89.7	9 K.
34	25	81.7	19	92.6	22	88.2	11
35	26	81.2	15	93.7	27	86.7	9 K.
36	27	80.3	22	91.8	24	87.5	9

8. Table I may be divided, in a purely arbitrary manner, into two sections, the first containing the factories 1 to 10, the second containing the remainder. Those in the first section may be regarded as reasonably efficient, those in the second section it is thought require attention in respect to some details, while those towards the bottom of the table should be thoroughly overhauled.

With regard to those in the first part of the table, namely, 1 to 10, Nos. 6 and 8 should receive attention in respect to their mill work.

9. Table II indicates in a similar manner the performance of the factories making white sugar. There is little here to call for specific comment.

10. Mr. Baissac has compiled Table III, showing the mean results of the salient features of the work of Mauritius factories for the past five years. He has added information concerning factories in Java and Hawaii. The figures relating to Java have reference to the factories making "raw" sugars by the defecation process and thus comparable with those of Mauritius: they do not refer to factories using carbonatation processes.

From the data presented in this table it is evident that there has been steady improvement in the work of the Mauritius factories during the past five years. The mill extraction has risen from 92.9 to 94.1 per cent., each year showing a slight increase over the previous one. The amount of sugar left in the bagasse has correspondingly diminished. These gains are reflected in the factor by which mill work can be independently judged, namely, that showing the amount of undiluted juice per 100 of fibre in the bagasse.

It will be noted that the mill extraction is not far below that of the Java mills taken for comparison. The boiling-house recovery in Mauritius lags behind that of Java.

TABLE II.
WHITE SUGAR FACTORIES.

<i>Factories.</i>	<i>Total Recovery White Sugar.</i>	<i>Mill Recovery.</i>	<i>Boiling- House Recovery.</i>	<i>Mill Equipment.</i>
1	1. 82.4	1. 94.5	2. 87.2	16
2	2. 82.0	2. 93.4	1. 88.0	11
3	3. 81.1	3. 93.0	3. 87.1	14
4	4. 80.5	1. 94.5	4. 85.2	11 K.
5	5. 80.4	5. 92.2	2. 87.2	11 K.
6	6. 76.9	4. 92.7	5. 83.0	14

TABLE III.
Average figures calculated from data forwarded by 40 Factories.
MAURITIUS.

Years.	Sucrose per 100 cane (Richesse).	Sucrose per 100 Bagasse.	Moisture per 100 Bagasse.	Mill Extraction. (Sucrose).	Boiling-House Recovery in Commercial Sugar.	Total Recovery per 100 Sucrose in cane, in Comm. Sugar.	Average Polarization of Sugars.	Undiluted Juice in Bagasse per 100 Fibre.
1925	13.22	3.7	45.4	92.9	85.7	79.6	99.3	55.6
1926	12.56	3.4	45.3	93.1	85.0	79.1	99.3	54.6
1927	12.97	3.3	44.8	93.7	86.3	80.9	99.3	46.4
1928	13.03	3.2	44.7	93.9	88.0	82.6	98.7	45.8
1929	12.87	3.1	44.8	94.1	89.1	83.8	98.5	44.7

COMPARATIVE FIGURES FOR JAVA AND HAWAII FOR 1928.

Java	13.06	2.9	45.2	94.4	94.1	88.8	97.1	—
Hawaii	12.55	1.5	41.5	97.3	93.7	91.0	97.5	22.2

Now that attention in Mauritius is centred on the making of raw sugars, it is possible that higher recoveries will be forthcoming. It would seem possible to carry the exhaustion of the final molasses to a further degree than is done at present, and this is a point on which the technologists might well centre attention.

As is to be expected, the mill work of Mauritius is inferior to that of Hawaii, which leads the world. Owing to the protection afforded to American sugar, perfect extraction of sugar from the cane is more remunerative in Hawaii than in other countries, consequently the mill work there is exceptionally good.

11. Reference has been made to the skilful manner in which the machinery in the factories is kept in order. The factories have useful repair shops attached to them, these shops being equipped to do all the ordinary repairs needed for keeping the factories running, and they are able, for the most part, to make iron and brass castings of moderate dimensions. In this way the machinery is, on the whole, kept in an efficient state. In addition to these repair shops at the factories, there are good engineering shops in the Colony, capable of making much of the machinery required for the factories, including even heavy and complicated machines and engines. The extent to which these engineering shops are capable of operating may be judged from the following information obtained from two of them.

The Forges Coloniales, Messrs. Tardieu & Co., among other work, have made :—

23 Vacuum pans of the following sizes :—

Tons.

12	...	...	...	...	...	...	1
15	...	...	...	...	...	...	7
18	...	...	...	...	...	...	2
20	...	...	...	...	...	...	11
25	...	...	...	...	...	...	2

- 10 Quadruple effect evaporators
- 2 Quadruple effect evaporators, improved } in 1907 to 1926.
- 3 Triple effect evaporators in 1910 to 1919.
- 3 Mills, complete with engines in 1905 to 1925.
- 1 Mill, with gears.
- 1 Mill, without gears.
- 5 Crushers in 1908 to 1920.
- 10 Circulators in 1925 to 1926.
- 5 Entrainment preventers, 1926, 1927.
- 148 Crystallizers, mostly 800 cu. ft., 1907 to 1916.
- 6 Juice heaters, 1916 to 1928.
- 7 Sulphitation plants, 1907 to 1927.
- 1 Liming apparatus, 1929.

Les Forges et Fonderies de Maurice, Ltd., among other work, have made :—

- 8 Vacuum pans of the following sizes :—
 - 5, 12 ft. diameter.
 - 1, 11 ft. 4 in. diameter.
 - 2, 9 ft. 1 in. diameter.
- 10 Triple and quadruple effects evaporators.
 - 1, 10,500 sq. ft. heating surface.
 - 3, 10,000 sq. ft. heating surface.
 - 3, 8,500 sq. ft. heating surface.
 - 3, 6,000 to 6,600 sq. ft. heating surface.
- 1 Mill, engine and gearing.
- 4 Mills with gears.
- 10 Crystallizers.
- 6 Juice heaters.
- 5 Hydraulic attachments to mills, sets of
- 6 Wet air pumps.
- 1 Dry air pump.
- 8 Acid water pumps.
- 4 Centrifugal pumps and engines.
- 3 Maceration tanks on mills.
- 4 Barometric condensers.
- 4 Cane cutters.
- 2 Wet sugar elevators.
- 4 Dry sugar elevators and driers.
- 8 Main cane carrier and independent engines.
- 8 Cush cush elevators.
- 6 Auxiliary carriers, cane shoots, and engines.
- 3 Fans and engines.
- 5 Filter presses.
- 3 Defecators.

12. As the outcome of the Mauritius Sugar Industry Conference of 1927, the Sugar Industry Reserve Fund Ordinance (1927) was passed whereby a special export duty of two cents of a rupee per fifty kilograms is levied on all sugar exported from the Colony. the proceeds being paid to a Sugar Industry Reserve Fund. The Ordinance provides that the Fund shall serve :—

- (1) To subsidize and encourage experimental installation of new machinery in sugar houses and in cane plantations;
- (2) To finance an agency of the Chamber of Agriculture in England;
- (3) To provide for the costs of visits of suitable persons of the Colony to other sugar-producing countries and of expert technologists from other countries to the Colony; and
- (4) To defray any expenses in connection with any other object which the Committee may consider beneficial to the sugar industry of the Colony.

A substantial fund is thus created and placed at the disposal of the Committee responsible for the operation of the Ordinance.

13. The putting into operation of this Ordinance at the instance, and at the expense, of the sugar producers themselves is evidence of a desire to maintain the sugar industry on a proper footing, in so far as experimenting with new machinery goes, and exchanging information with experts in respect to the technical aspects of sugar growing and manufacture, and a determination, by co-operative action, to make available the best and latest knowledge for the general advancement of the industry. The result is seen in the technical progress made by the industry and in the receptive attitude towards new ideas displayed by those engaged in it. In this way, steady progress is assured.

14. The Agency in England contemplated by the Ordinance is in operation, and something has already been done with regard to the exchange of visits on the part of experts.

15. Useful work has been done in connection with the experimental installation of new machinery by establishing at one of the factories apparatus for the accurate weighing and measuring of cane-juice, maceration-water, molasses, etc., for the purpose of accurate chemical control of the sugar factory, and in order to see what apparatus of this kind it is desirable to introduce in factory practice. The installation has been in use throughout the crop just closed, and has given valuable information, which is so appreciated that the apparatus is being purchased from the Committee by the factory and, doubtless, similar appliances will soon be installed in other factories.

At the same time, arrangements were made for the installation of apparatus for the study of the production, utilization, and control of steam in the factory. The necessary apparatus has been obtained and preliminary work done with it. It is anticipated that valuable information will be forthcoming from its use in the coming season.

16. Activities of this nature have much significance, revealing, as they do, a progressive scientific spirit.

17. In view of what is here stated, it may be conceded that the manufacture of sugar in Mauritius is carried on in a reasonably efficient manner, and that the critical condition of the sugar industry is not directly traceable to defects in manufacture. It does not appear that the restoration of the sugar industry to a state of prosperity can be effected by change or improvements in manufacture.

On the whole, the work of the factories appears to be reasonably good ; in the case of many of them, quite good. There are instances, as may be gathered from the information here submitted, where considerable improvements are called for, but as these improvements,

if made, would have the effect of improving the status of a few individual proprietors, they would not seriously affect the status of the industry as a whole. The work of some of the factories, as the data submitted tend to prove, is quite good. Furthermore, it is important to note that the work of sugar making is well understood in Mauritius, the factory-owners being alert and quite capable of adopting such up-to-date methods as commend themselves; at the same time they are supported by capable technical factory staffs to enable them to make efficient use of the knowledge brought to their notice by experts in any part of the world. If the sugar industry can be placed on a paying basis, I feel sure that the sugar-producers of Mauritius may be trusted to bring their field and factory methods to an eminently efficient state and to maintain them there.

ANNEXURE V.

CENTRAL FACTORIES.

1. The question of the erection of large central factories received consideration at the Mauritius Sugar Industry Conference, 1927, when no very definite conclusions appear to have been arrived at. The general impression appears to have been that, while an increase of output would result from the adoption of large central factories, and there might be some reduction of working expenses, the great cost of such factories might considerably outweigh the advantages. Furthermore, at the present moment there is no large area in which public opinion is ripe for amalgamation into one centralized unit. While it might be possible to preserve the individuality of each estate as regards the growing of canes, a great deal would have to be done in determining the mutual relationship of each to one large factory. The time does not appear to be ripe for putting forward concrete proposals with regard to this respect.

2. During recent years something has been done by the closing of a certain number of factories and amalgamating their interests with others. In this way the number of factories has been reduced from 66 in 1908 to 43 in 1929, and there is every reason to suppose that further changes on similar lines are likely to occur in the near future.

3. In the present unsettled condition of the sugar industry it would probably be better to leave matters to take this natural course for a few years. It is not felt that the critical condition of the industry would be ameliorated by the sudden expenditure of very large sums of money in the creation of one or more large central factories, accompanied as this would be by the disturbance

of existing interests, and calling for much work in the elaboration of plans for co-operative working.

4. In the meantime, it is open to the estate-owners to consider whether there are areas in which amalgamation of interests appear to be possible and desirable and to agree amongst themselves the extent to which this might be done and the spot at which the centralization might take place.

5. With these broad facts before them, those immediately interested would be in a position to consider the necessary details, such as the desired size and probable cost of the factory, the manner in which it may be financed, the nature of the agreements to be made with the contributing estates, and the manner in which the canes can be received from them.

6. It would appear that these are matters for the consideration of the individual estate proprietors than of the Colony as a whole.

ANNEXURE VI.

FINANCIAL FORMS RELATIVE TO THE PROPOSED GRANT-IN-AID.

STATEMENT A.

Statement of total output of sugar.

This statement will be compiled as soon as possible after the factory has completed making sugar.

It should be forwarded to the Government as soon as possible, and before 31st January following the crushing season, to enable the total sum for the grant to be assessed for the information of the Imperial Government.

The document must be certified by the manager and two directors or owners of the factory.

The Government Inspector will be able to have confidential access to all estate books and documents, to enable him to verify the statement.

This is the only statement required to be sent in to Government, all others being retained by the factory for confidential inspection by a duly accredited Government Inspector, when called for.

Confidential.

STATEMENT A.

THE.....SUGAR COMPANY, LTD.

STATEMENT OF TOTAL OUTPUT FOR THE YEAR 19 , TO 19 .

Certified that the total amount of sugar manufactured by the
 Factory from canes from all sources during the crop
 19 -19 was kilos, out of which kilos of sugar
 have been given to planters in payment for canes.

.....
Manager.

Date.....

..... }
 } Directors.

.....Date.

NOTE.—To be sent in to Government before 31st January in each
 year after the crop.

FINANCIAL FORMS RELATIVE TO THE PROPOSED
GRANT-IN-AID.

STATEMENT B.

Faisance Valoir for the crop 19 -19 .

This is a statement compiled in the ordinary way showing the
 details, in totals, of the various items of expenditure under cultivation
 and factory expenses for the crop.

Interest on *Faisance Valoir*, if any, should be included, but head
 office or town office charges and f.o.b. charges are to be shown in
 the Profit and Loss account on Statement C.

This form will be retained by the factory and will be available
 for confidential inspection at any time by a duly accredited
 Government Inspector.

THE.....SUGAR ESTATE COMPANY LTD.

FAISANCE VALOIR FOR THE CROP 19...../19.....

NOTE.—To be retained by the company or factory and available for confidential Government inspection when required.

Profit and Loss Account.

The opening balance will be the gross profit on the working of the year as regards actual field and factory expenses and the sale of sugar actually made to date.

The items of expenditure grouped in this account are those usually found in a profit and loss account, and will clearly indicate the selling and extraordinary charges, as separated from manufacturing and cultivation charges.

Directors' fees must be shown in a lump sum representing the total remuneration for the year, in accordance with the requirements of the Companies Act, 1929.

The appropriation of dividends is clearly indicated, and the item Reserve Account next below is the estate's ordinary reserve account, if any, differentiating from the Government Conditional Reserve referred to below.

The sugars to realize must be shown in weight and approximate estimated price.

The Government Conditional Reserve is a conditional cash deduction from the suggested Government Grant-in-Aid, and is clearly shown thus as a deduction made from the total yearly sum granted and not available for any other purpose than investment in some form of Trustee Security or other approved investment.

It being a condition of the grant-in-aid that at least one per cent. of the average value, as determined by the conditions of the grant, of the total sugar output of the factory in each year, be set aside as a Reserve Fund until a total reserve fund is built up equal to not less than one-third of the average value, calculated over five years, of the amount of the sugar so produced. By the method adopted in this profit and loss account only the net sum, after deducting the compulsory reserve, becomes available to meet expenditure.

Special accounts will of necessity have to be kept for this reserve fund as follows :—1, Government Conditional Reserve Fund ; 2, Government Conditional Reserve Fund Investment Account, and 3, Interest Account. The interests received from such investments being immediately reinvested to increase the capital sum.

This statement C will be kept by the estate and be available when required for confidential inspection by a duly accredited Government Inspector.

THE.....SUGAR ESTATE COMPANY LTD.

PROFIT AND LOSS ACCOUNT AS AT 19...

Dr.

Cr.

	Rs.	Cs.		Rs.	Cs.
To General Administration Expenses, Town Office, and f.o.b. charges			By Profit on Exercise		
" Bad debts... ..			" Sugars to realize (estimated) Kilos at Rs. per 50 Kilos		
" Directors' Fees			" Sundry receipts including discounts		
" Interest on Mortgages (secured)			" Government Grant Rs.		
" Interest (other) (not including interest on F.V.)			" Less 1 per cent Conditional Reserve Rs.		
" Depreciation, if any				Rs.	
" Installation <i>Nouvelles amortissement</i>					
" Balance—Net Profit c/d... ..					
	Rs.			Rs.	
To Dividends at % on Rs.			By Balance b/d		
" Reserve a/c.			" " from previous year		
" Balance to Balance Sheet					
	Rs.			Rs.	

Directors Accountant

Date.....

NOTE.—To be retained by the company or factory and available for confidential inspection when required.

STATEMENT D. BALANCE SHEET.

The Balance Sheet is drawn up in the usual commercial accounting manner, embodying the requirements of the Companies Act, 1929, and differs somewhat from the form at present adopted in Mauritius. It is felt, however, that better security is offered to both the estate and Government if the present form D is employed. This will not prevent the estates putting up their balance sheets for their shareholders in their usual style, should they wish to continue to do so, subject, of course, to the new requirements of the Companies Act, 1929.

However, for uniformity and facility of control, it is suggested that the present form D may be accepted, as it shows the financial position in a clearer manner and in more detail which is very necessary when Government is interested as an investor in relation to the proposed grant-in-aid and the possible introduction of a Government Agricultural Bank in Mauritius.

The Liabilities side clearly shows the position of the estate in that respect, and the Assets side shows just what is essentially necessary for an investor or other interested party to be made aware of.

The Government Conditional Reserve Fund Investments are clearly shown, and can therefore be easily verified.

In Mauritius it is the practice to show their Land, Buildings, Plant, etc. (known locally as *Bienfonds*), in one figure which remains fixed. No additions or reductions being usually made. It therefore gives rise to a very unsatisfactory state as regards the value of the property. Many estates show this valuation to be the same as it was when the estate was purchased some 10 to 20 years ago.

Great fluctuations have taken place in values even during the last few years, yet the book value of the estate is constant.

As there are only 43 estates with factories which will come under these regulations, it is suggested that, if possible, a revaluation might be made of the lands, buildings, plant, etc., and the accounts kept as shown in the Balance Sheet under estate account and plant and machinery account.

The necessary provision for depreciation should also be made and the two accounts kept up to date accordingly.

If the accounts cannot be so split up, and there appears to be no reason why they cannot be, then revaluation of the whole estate should be made and the requisite depreciation charged annually against the one account.

By depreciation is understood the gradual permanent decrease in the value of an asset from any cause. The causes are twofold : 1, Ordinary inherent, or internal, such as wear and tear of wasting assets arising through use of working ; e.g., plant, machinery, and buildings. 2, Extraordinary or external, such as obsolescence in the case of machinery.

It is obvious therefore that, unless assets are depreciated, their value on the Balance Sheet will be overstated and the true representation of the state of the business will not be shown.

Assets such as plant and machinery are held with a view of earning income, and any loss which arises from wear and tear in earning such income should be charged against it.

The method in general use in Mauritius is to charge all repairs to revenue, together with such heavy renewal expenditures as are incurred from time to time. If profits are not available for meeting these renewal charges, they are capitalized and written off as and when financial conditions permit.

It may therefore be argued in Mauritius that this system meets the requirements of a depreciation account, seeing that they maintain their factories, in some cases, in a condition as good as the original.

This can hardly be admitted, for no allowance is made for obsolescence, depreciation of values, or acquisition of modern plant, and, in the circumstances now due to the present depression in the sugar market, factories for the last two years have not been able to be maintained in a thoroughly efficient condition, because of lack of money, and, therefore, at the moment their true value is unknown. There are cases where factories are worth more than shown in the Balance Sheets, as they were bought at low figures and have had considerable sums expended upon them.

An important point is the question of an auditor's certificate. In the event of a Government grant being made to the sugar industry, it is considered that the accounts should be certified in a manner required under the Companies Act, 1929. It would be preferable if accounts could be audited by duly qualified auditors, but, as the number available is very limited, the certificate should be water-tight and binding enough to ensure a true and correct check being made.

There are several private companies and civil partnerships owning estates, and in the normal way the requirements of the Companies Act would not affect them. However, if they are anxious for financial assistance from Government, the concomitant conditions are laid down and should be accepted.

The Balance Sheet and other financial statements are entirely confidential, to be retained at the head office or factory and only open to confidential inspection by the Government's inspector.

There does not appear to be any hardship or injustice in these requirements, which are only the details the parties would be called upon to supply if they approached a bank manager for financial assistance.

Confidential.

STATEMENT D.
THE.....SUGAR ESTATE COMPANY, LTD.
BALANCE SHEET AS AT 19..

<i>Liabilities.</i>		<i>Assets.</i>	
	Rs.		Rs.
<i>Authorized Capital—</i>			
Ordinary Shares of Rs. each	Estate A/c (Land and Buildings) ...	...
Preference Shares of Rs. each	Less Depreciation ...	...
<i>Issued Capital—</i>			
Ordinary Shares of Rs. each	Less any deductions ...	...
Preference Shares of Rs. each		
(If any calls paid in advance— <i>add</i>)	Plus any additions ...	...
(If any calls in arrear— <i>deduct</i>)		
Government Conditional Reserve Fund	...	Plant and Machinery A/c ...	...
<i>Add—</i> Proportion for the year	Less Depreciation ...	...
Mortgages or Debentures	Plus any additions ...	...
Bills payable		
Interest on Mortgages or Debentures...	...	Loose Tools ...	...
Sundry Trade Creditors	Loans on Security ...	...
Dividends unclaimed	Investments ...	...
Reserve Account—Ordinary	Government Conditional Reserve Investment	...
Suspense A/c—Government Sugar Loan, 1929	...	Fund ...	...
Contingent Liabilities	<i>Add—</i> Interest invested ...	...

Profit and Loss A/c Balance 19	Rs.
Add—Profit for the year	
Less Dividends	
Less Transfer to Reserve	
	Rs.

Stock-on-hand	Rs.
Sundry Debtors.. ..	
Bills Receivable... ..	
Sugars to Realize	
Cash in hand	
Cash at Bank	
	Rs.

We have audited the books of the Sugar Estate and examined the above Balance Sheet and Profit and Loss Account, with the books and vouchers of the Estate. We have obtained all the information and explanations we have required. In our opinion the above Balance Sheet, dated.....19..., is properly drawn up so as to exhibit a true and correct view of the Estate of the (Company or) Estate, according to the best of our information and the explanations given to us, and as shewn by the books of the Company.

Sd. } Directors.
.....

Sd. Accountant.
Date.....

..... } Auditors.
.....

Address and date.....

NOTE.—To be retained by the company or factory and available for Government confidential inspection when required.

